**3GPP TSG-SA4 meeting #113-e *S4-210499***

**Electronic Meeting, 6th-14th April, 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **PSEUDO CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **TR 26.803** | **CR** | **–** | **rev** | **–** | **Current version:** | **0.5.1** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Update on the SA6 generic procedures | | | | | | | | | |
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| ***Source to WG:*** | Huawei Technologies Co. Ltd | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_EMSA | | | | |  | ***Date:*** | | | 2021-3-31 |
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| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*. | | | | | | | |  | |
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| ***Reason for change:*** | | The generic procedures defined in SA6 is not clear. | | | | | | | | |
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| ***Summary of change:*** | | Update on the SA6 generic procedures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
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| ***Clauses affected:*** | | 4.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

FIRST CHANGE

## 4.2 SA6 Edge Architecture

SA6 has taken significant steps towards the definition of normative edge computing architecture for 5GC in [3]. Starting from common scenarios, described in the Annex, a set of requirements is defined, and the following architecture is proposed:



Figure 1: SA6 Edge data network architecture

The architecture defines the key nodes and functions as well as the interfaces between them.

The identified functions with a brief description is given here:

* Edge Enabler Server (EES): provides supporting functions needed for Edge Application Servers and Edge Enabler Client.
* Edge Enabler Client (EEC): provides supporting functions needed for Application Client(s).
* Edge Configuration Server (ECS): provides supporting functions needed for the Edge Enabler Client to connect with an Edge Enabler Server.
* Edge Application Server (EAS): the application server resident in the Edge Data Network, performing the server functions. The Application Client connects to the Edge Application Server in order to avail the services of the application with the benefits of Edge Computing.
* Application Client (AC): application resident in the UE performing the client function. Details of the Application Client are out of scope of this specification.

A typical sequence of steps to use edge computing services is as follows:

1. Service Provisioning:

- instance.

2. Registration:

- EESs register with the ECS to publish their edge configuration capabilities.

- The EEC registers with a selected EES for further EAS discovery and Edge Computing Service usage.

- EAS instances register with EES instances to publish their edge capabilities.

3. EAS discovery:

- The EEC queries the EES to discover specific EASs. Different types of filtering information contained in the EAS discovery filters can be used during this discovery phase in the EAS discovery request.

- The EES identifies the appropriate EAS instance(s) according to the UE-specific service information and the UE location.

- Via the EAS discovery response, the EEC receives the discovered EAS instance(s) with the corresponding EAS profile which may include additional information regarding matched capabilities, e.g. service permission levels, service area, KPIs.

- The detailed information for key messages and elements of the EAS discovery procedures is shown as below in Tables X, Y, Z, XX and YY.

Table X: EAS discovery request

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| --- | --- | --- |
| Information element | Status | Description |
| Requestor identifier | M | The ID of the requestor (e.g. EECID) |
| UE Identifier | O | The identifier of the UE (i.e. GPSI or identity token) |
| Security credentials | M | Security credentials resulting from a successful authorization for the edge computing service. |
| EAS discovery filters | O | Set of characteristics to determine required EASs, as detailed in Table Y. |

Table Y: EAS discovery filters

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| List of AC characteristics (NOTE 1) | O | Describes the ACs for which a matching EAS is needed. |
| > AC profile (NOTE 2) | M | AC profile containing parameters used to determine matching EAS. AC profiles are further described in Table 8.2.2-1 of TS 23.558 [3]. |
| List of EAS characteristics (NOTE 1, NOTE 3) | O | Describes the characteristic of required EASs. |
| > EASID | O | Identifier of the required EAS. |
| > EAS provider identifier | O | Identifier of the required EAS provider |
| > EAS type | O | The category or type of required EAS (e.g. V2X) |
| > EAS schedule | O | Required availability schedule of the EAS (e.g. time windows) |
| > EAS Geographical Service Area | O | Location(s) (e.g. geographical area, route) where the EAS service should be available. |
| > EAS Topological Service Area | O | Topological area (e.g. cell ID, TAI) for which the EAS service should be available. See possible formats in Table 8.2.7-1 of TS 23.558 [3]. |
| > Service continuity support | O | Indicates if the service continuity support is required or not. |
| > EAS status | O | Required status of the EAS (e.g. enabled, disabled, etc.) |
| > Service permission level | O | Required level of service permissions e.g. trial, gold-class |
| > Service feature(s) | O | Required service features e.g. single vs. multi-player gaming service |
| NOTE 1: Only one of the information elements shall be present.  NOTE 2: "Preferred ECSP list" IE shall not be present.  NOTE 3: The "List of EAS characteristics" IE must include at least one optional IE, if used as an EAS discovery filter. | | |

Table Z: EAS discovery response

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| Information element | Status | Description |
| Successful response | O | Indicates that the EAS discovery request was successful. |
| > Discovered EAS list | O | List of discovered EAS(s). Each element includes the information described below. |
| >> EAS profile | M | Profile of the EAS. Each element is described in Table XX. |
| >> Lifetime | O | Time interval or duration during which the information elements in the EAS profile is valid and supposed to be cached in the EEC (e.g. time-to-live value for an EAS Endpoint) |
| Failure response | O | Indicates that the EAS discovery request failed. |
| > Cause | O | Indicates the cause of EAS discovery request failure. |

Table XX: EAS Profile

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| Information element | Status | Description |
| EASID | M | The identifier of the EAS |
| EAS Endpoint | M | Endpoint information (e.g. URI, FQDN, IP address) used to communicate with the EAS. This information maybe discovered by EEC and exposed to ACs so that ACs can establish contact with the EAS. |
| ACID(s) | O | Identifies the AC(s) that can be served by the EAS |
| EAS Provider Identifier | O | The identifier of the EAS Provider |
| EAS Type | O | The category or type of EAS (e.g. V2X) |
| EAS description | O | Human-readable description of the EAS |
| EAS Schedule | O | The availability schedule of the EAS (e.g. time windows) |
| EAS Geographical Service Area | O | The geographical service area that the EAS serves. ACs in UEs that are located outside that area shall not be served. |
| EAS Topological Service Area | O | The topological service area that the EAS serves. ACs in UEs that are located outside that area shall not be served. See possible formats in Table 8.2.7-1 of TS 23.558 [3]. |
| EAS Service KPIs | O | Service characteristics provided by EAS, detailed in Table YY |
| EAS service permission level | O | Level of service permissions e.g. trial, gold-class supported by the EAS |
| EAS Feature(s) | O | Service features e.g. single vs. multi-player gaming service supported by the EAS |
| Service continuity support | O | Indicates if the EAS supports service continuity or not. This IE may also indicate whether the EAS supports ACT. |
| List of EAS DNAI(s) | O | DNAI(s) associated with the EAS. This IE is used as Potential Locations of Applications in clause 5.6.7 of 3GPP TS 23.501 [2].  It is a subset of the DNAI(s) associated with the EDN where the EAS resides. |
| List of N6 Traffic Routing requirements | O | The N6 traffic routing information and/or routing profile ID corresponding to each EAS DNAI. |
| EAS Availability Reporting Period | O | The availability reporting period (i.e. heartbeat period) that indicates to the EES how often it needs to check the EAS's availability after a successful registration. |
| EAS Required Service APIs | O | A list of the Service APIs that are required by the EAS |
| EAS Status | O | The status of the EAS (e.g. enabled, disabled, etc.) |

YY

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4. EAS relocation:

- The *detection entity* role can be potentially performed by the Application Client (AC), the Edge Enabler Client (EEC), an Edge Enabler Server (EES) and/or an Edge Application Server (EAS).

- A *decision-making entity* determines that application context relocation is required and instructs the execution entity to perform application context transfer.

- An *execution entity* performs application context relocation as and when instructed by the decision-making entity.

- After successful application context relocation, the EES is informed of the completion by the EAS and the EEC is informed of the completion by the EES.

Figure 2 represents the SA6 edge server architecture as defined in [3].

The XR server capabilities needed for the split rendering use-case if run on an edge server, is supported by an Edge Application Server (EAS) in the above figure.